WATER BATHS

SWB30

SWB30-2

Previously Designated as

WPC95 & WPC95-2

MICROPROCESSOR CONTROLLED

INSTALLATION AND OPERATION MANUAL

4861564
Revised December 20, 2013

These units are TUV CUE listed as water baths for professional, industrial or educational use where the preparation or testing of materials is done at approximately atmospheric pressure and no flammable, volatile or combustible materials are being heated. These units have been tested to the following requirements:

CAN/CSA C22.2 No. 61010-1:2012
CAN/CSA C22.2 No. 61010-2-010 + R:2009
UL 61010A-2-010:2002
UL 61010-1:2012
EN 61010-1:2010
EN 61010-2-010:2003

IEC 61010-1:2010
IEC 61010-2-010:2003

Sheldon Manufacturing Inc.
P.O. Box 627
Cornelius, Oregon 97113

EMAIL: **tech@Shellab.com**

INTERNET: **http://www.Shellab.com**

PHONE: 1-800-322-4897 (503) 640-3000

FAX: (503) 640-1366

TABLE OF CONTENTS

INTRODUCTION 4
General Safety Considerations 4
RECEIVING YOUR UNIT 5
Inspection Guidelines 5
Returning Shipment 5
Recording Data Plate Information 5
GRAPHIC SYMBOLS 6
INSTALLATION 7
Environmental Conditions 7
Power Source 7
Location 7
Lifting and Handling 7
Cleaning and Decontamination 7
CONTROLS OVERVIEW 8
Power Switch 8
Main Temperature Controller 8
Fuses 8
Over Temperature Limit Thermostat (OTL) 8
Heating Activated 8
Over Temperature Activated Light 8
OPERATION 9
Turning On the Unit 9
Setting Main Temperature Control 9
Calibrating the Main Temperature Control 9
Setting the Over Temperature Limit Thermostat 10
Bath Cover Assembly 11
MAINTENANCE 12
Cleaning 12
Heating and Water Level 12
Test-tube Racks 12
TROUBLESHOOTING 13
Service 14
PARTS LIST 15
UNIT SPECIFICATIONS 16
SCHEMATICS 17

Section 1

INTRODUCTION

Thank you for choosing a general purpose water bath. These units are not intended for use at hazardous or household locations.

Before you use the unit, read this entire manual carefully to understand how to install, operate, and maintain the unit in a safe manner. Your satisfaction with the unit will be maximized as you read about its safety and operational features.

Keep this manual on-hand so it can be used by all operators of the unit. Be sure all operators of the unit are given appropriate training before you put the unit in service.

Note: Use the unit only in the way described in this manual. Failure to follow the guidelines and instructions in this manual may be dangerous and illegal.

General Safety Considerations

Your water bath and its recommended accessories have been designed and tested to meet strict safety requirements.

For continued safe operation of your water bath, always follow basic safety precautions including:

- Read this entire manual before using the water bath.
- Be sure you follow any city, county, or other ordinances in your area regarding the use of this unit.
- Use only approved accessories. Do not modify system components. Any alterations or modifications to your water bath may be dangerous and will void your warranty.
- Always plug the unit's power cord into a grounded electrical outlet that conforms to national and local electrical codes. If the unit is not grounded, parts such as knobs and controls may conduct electricity and cause serious injury.
- Do not connect the unit to a power source of any other voltage or frequency beyond the range stated on the power rating overlay at the rear of the unit.
- Do not modify the power cord provided with the unit. If the plug does not fit an outlet, have a proper outlet installed by a qualified electrician.
- Avoid damaging the power cord. Do not bend it excessively, step on it, place heavy objects on it. A damaged cord can easily become a shock or fire hazard. Never use a power cord after it has become damaged.
- Do not position equipment in a manner that prohibits access to power cord.
- Do not attempt to move the unit while in operation or before the unit has been allowed to cool.

Section 2

RECEIVING YOUR UNIT

Before leaving our factory, all units are packaged in high quality shipping materials designed to provide protection from transportation related damage.

Once a unit leaves our factory, safe delivery becomes the responsibility of the carrier who is liable for loss or damage to your unit. Damage sustained during transit is not covered under your unit warranty.

When you receive your unit, inspect it for concealed loss or damage to its interior and exterior. Should you find any damage to the unit, follow the carrier's procedure for claiming damage or loss.

Inspection Guidelines

Carefully inspect the shipping carton for damage. If the carton is damaged, report the damage to the carrier service that delivered the unit.

If the carton is not damaged, open the carton and remove its contents. Verify that all of the following equipment is included in the crate:

- One (1) water bath unit
- One (1) bath cover
- One (1) magnetic thermometer clip
- One (1) power cord

Carefully check all packaging before discarding. Save the shipping carton until you are sure everything is in order.

Returning Shipment

If you must return the unit for any reason, first contact your service representative for authorization. You will be asked to provide the data plate information. See Recording Data Plate Information.

Recording Data Plate Information

Once you have determined the unit is free from damage, locate the data plate at the back of the unit. The data plate indicates your unit's model number and serial number. Record this information below for future reference.

Table 1. Data Plate Information

Model Number	
Serial Number	
Part Number	
Voltage	

Section 3

GRAPHIC SYMBOLS

Your unit is provided with a display of graphic symbols that should help in identifying user adjustable components.

Table 2. Symbols

Symbol	Identification
	Indicates that you should consult your operator's manual for further instructions. *Indique que l'opérateur doit consulter le manuel d'utilisation pour y trouver les instructions complémentaires.*
	Indicates "Temperature" *Repère "température"*
	Indicates "Over Temperature Protection" *Signale un "dépassement de température"*
	Indicates "AC Power" *Repère "secteur AC"*
I	Indicates the power is "ON" *Repère de la position "MARCHE" de l'interrupteur d'alimentation*
O	Indicates the power is "OFF" *Repère de la position "ARRÊT" de l'interrupteur d'alimentation*
	Indicates "Protective Earthground" *Repère de la "terre de protection"*
	Indicates "Up" and "Down" respectively *Touches de déplacements respectifs vers le "HAUT" et le "BAS"*
	Indicates "Manually Adjustable" *Signale un élément "réglable manuellement"*
	Indicates "Potential Shock Hazard" behind partition *Signale un "risque potentiel d'électrocution" au-delà de la cloison.*
	Indicates "Hot Surface" *Signale une "surface à haute température"*
	Indicates "**Unit should be recycled"** (Not disposed of in land-fill). *Indique "**l'appareil doit être recyclé**" (Ne pas jeter dans une décharge)*

Section 4

INSTALLATION

Your satisfaction and safety require a complete understanding of this unit. Read the instructions thoroughly and be sure all operators are given adequate training before attempting to put the unit in service.

This equipment must be used only for its intended application; any alterations or modifications will void your warranty. Local city, county, or other ordinances may govern the use of this equipment. If you have any questions about local requirements, please contact the appropriate local agency. The end user may perform installation.

Environmental Conditions

Under normal circumstances these units are intended for use indoors, at room temperatures between 18° and 40°C, at no greater than 80% relative Humidity (at 25°C) and with a supply voltage that does not vary by more than 10% from the data plate rating. This equipment should not be operated at an altitude exceeding 2000 meters. Installation category is II, pollution degree 2. Customer service should be contacted for operating conditions outside of these limits.

Power Source

Check the data plate for voltage, cycle, and ampere requirements. If matched to your power source, plug the power cord into a grounded outlet.

Voltage should not vary more than ± 10% from the data plate rating.

These units are intended for 50/60-HZ application. A separate circuit is recommended to prevent damage to the unit due to overloading or circuit failure.

Location

In selecting a location, consider all conditions that might affect performance, such as heat from radiators, ovens, autoclaves, etc. Avoid direct sun, fast-moving air currents, heating and cooling ducts, and high traffic areas. Allow a minimum of 10 cm between the unit and any walls or partitions that might obstruct free airflow.

Lifting and Handling

These units are heavy and care should be taken to use appropriate lifting devices that are sufficiently rated for these loads. Units should only be lifted from their bottom surfaces. Handles and knobs are not adequate for lifting or stabilization. The unit should be completely restrained from tipping during lifting or transport. All moving parts such as trays or covers should be removed during transfer to prevent shifting and damage.

Cleaning and Decontamination

In the event hazardous material is spilled onto or into the equipment appropriate decontamination must be carried out. If there is any doubt about the compatibility of decontamination or cleaning agents with parts of the equipment or with material contained, please contact the manufacturer. Units are cleaned at the factory, but not sterilized. Remove any racks if assembled and clean the bath with a disinfectant that is suitable for your application. See MAINTENANCE for cleaning instructions and precautions.

Section 5

CONTROLS OVERVIEW

This section provides an overview of the panel controls. See Figure 1 for an illustration of the panel controls.

Figure 1. Control Panel

Power Switch

The Green I/O (On/Off) power switch, located in the top right hand corner of the control panel, controls all power to the unit. It must be in the **I** position to be ON and illuminated before any systems are operational. The on/off switch must remain easily accessible at all times.

Main Temperature Controller

This control is marked SET TEMPERATURE and consists of the digital display and UP and DOWN arrow pads for inputting set point temperatures and calibration.

Fuses

The fuses are located at the back of the unit within the fuse holders. The fuses act as a circuit breaker and will cut off power to the unit if there is an electrical surge or malfunction. The fuses must be in place for the unit to operate. Please contact customer service for more information.

Over Temperature Limit Thermostat (OTL)

This controller is marked “Set Over Temperature” and is completely independent of the Temperature Controller. The OTL guards against any failure of the Temperature Controller that would allow the temperature to rise past set point. If the temperature rises to the OTL set point, the OTL takes control of the heating element and allows continued use of the water bath until the problem can be resolved or service can be arranged. The OTL is manually adjusted with a screwdriver or coin so accidental adjustment cannot occur.

Heating Activated

This light is ON when the Temperature Controller has activated the heating element to reach and maintain set point.

Over Temperature Activated Light

This light is ON when the Over Temperature Safety Thermostat has been activated. Under normal operating conditions this light should never be on.

Section

6

OPERATION

Warning: These baths are not intended for use as acid baths. Use as an acid bath will cause severe damage to bath components and void your warranty. Do not use deionized water, tap water, or chemicals. USE DISTILLED WATER ONLY.

Attention : Ces bains d'eau ne sont pas conçus pour les acides. Utiliser un tel bain comme bain d'acide l'endommagera gravement et annulera la garantie. Ne pas utiliser d'eau désionisée, d'eau du robinet ni de produits chimiques. UTILISER EXCLUSIVEMENT DE L'EAU DISTILLÉE.

Turning On the Unit

To turn on the unit, perform the following steps:

1. Check power supply against unit serial plate; they must match.
2. Plug service cord into the electrical outlet. If supplied with a detachable cordset, plug the female end into the unit inlet and the male plug into the power supply. Verify that units requiring a fuse have the fuse installed in the power inlet.
3. Fill bath to your required depth with DISTILLED WATER. DO NOT USE TAP WATER, DEIONIZED WATER, OR CHEMICALS. Normal depth is 5 ½ inches (14 cm), but depth must be at least 2 inches (5 cm) over the bottom of the rack. Check water level frequently, add water to appropriate levels if needed. At higher operating temperatures, or under circumstances where a cover cannot be used, it will be necessary to check the water level more frequently.
4. Push the Main power switch to the ON position and turn the Over Temperature Safety Thermostat to its maximum position, clockwise.

Setting Main Temperature Control

To enter set point mode on the control, push and release either the Up or Down arrow pad one time and the digital display will start to blink from bright to dim. While blinking, the digital display shows the set point that can be changed using the UP or DOWN arrow pads. If the arrow pads are not pressed for five (5) seconds, the display will stop blinking and will revert to reading the actual temperature in the bath. Allow at least two (2) hours for the temperature to stabilize.

Warning: If the tank boils dry while containing plastic ware, the plastic can melt. If you intend to use test tube racks, remember that plastic coated wire racks may wear and expose metal that can cause damage. Preferably, use all plastic racks.

Attention : Si la cuve vient à s'assécher tandis qu' elle contient des ustensiles en plastique, le plastique risque de fondre. Si des râteliers à tubes à essais constitués d'une ossature métallique gainée de plastique sont utilisés, prendre garde que le plastique peut fondre ou s'user et découvrir des parties métalliques risquant d'endommager différentes pièces. Il est préférable d'utiliser des râteliers à tubes entièrement en plastique.

Calibrating the Main Temperature Control

We recommend that you calibrate your unit once it has been installed in its working environment and the

chamber temperature has been stable at the set point for several hours.

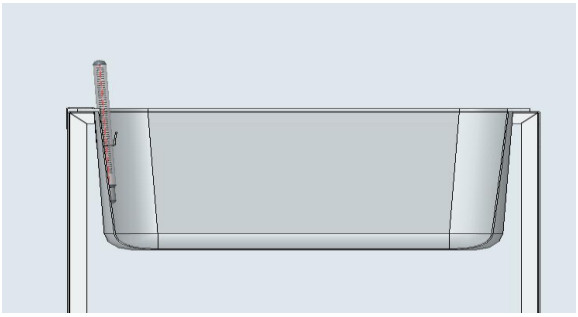
1. Place a calibrated reference thermometer in the bath (a thermometer clip is provided with the accessories package). (See Figure 2 for placement.) Allow the thermometer to reach temperature and remain stable for one (1) hour.
2. Compare the reading on the reference thermometer with the temperature control display. If there is a difference, put the display into calibrate mode by pressing both the Up and Down arrow pads at the same time until the two (2) outside decimal points begin to blink.
3. When the decimal points are blinking, press the Up or Down arrow pad to adjust the display to match the reference thermometer. If the arrow pads are not pressed within five (5) seconds the display will revert to showing the temperature within the bath.
4. Allow the unit to stabilize again, and repeat calibration if necessary.

Setting the Over Temperature Limit Thermostat

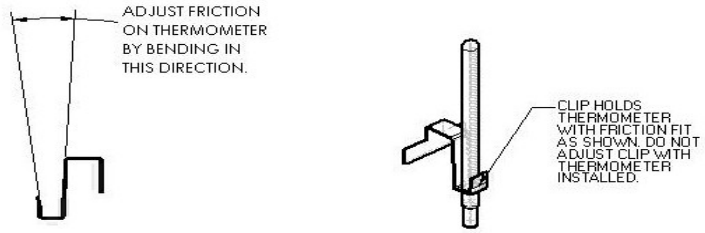
To set the Over Temperature Thermostat, perform the following steps:

1. Verify that the Thermostat was set to its maximum position to allow the water bath to stabilize.
2. Turn the Thermostat counterclockwise until the Safety indicator light turns on.
3. Turn the Thermostat clockwise until the Safety indicator light turns off.
4. Turn the thermostat clockwise again, 1/16” past the point where the indicator light went out. This will set the Thermostat at approximately 1°C above the Main Temperature set point.

Figure 2. Thermometer Placement



9850563


ADJUST FRICTION ON THERMOMETER BY BENDING IN THIS DIRECTION.
CLIP HOLDS THERMOMETER WITH FRICTION FIT AS SHOWN. DO NOT ADJUST CLIP WITH THERMOMETER INSTALLED.

Note: Water bath thermometer must be placed so that the bulb is always fully immersed. The thermometer must not touch the sides or the bottom of the bath tank.

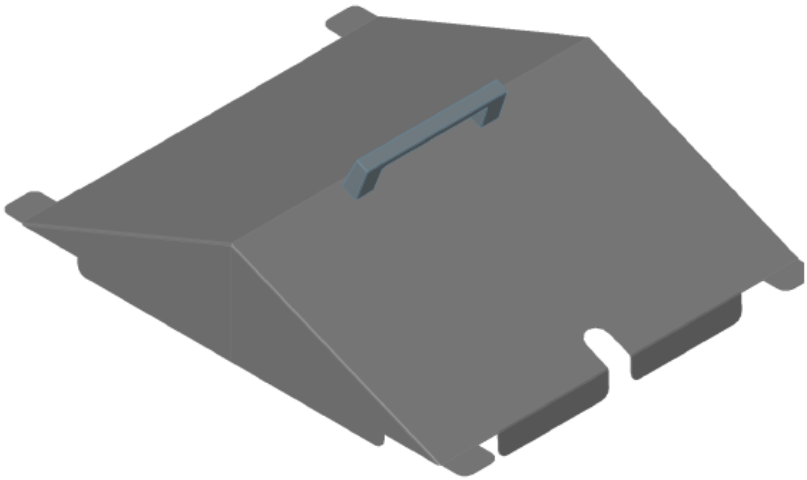
Remarque : L'élément chauffant du bain n'est pas en contact avec le fond de la cuve et est protégé dans le cas où la cuve s'assèche. Cependant, il vaut mieux éviter que cela se produise car le chauffage à sec impose de fortes contraintes aux parois.

Bath Cover Assembly

To assemble the bath cover, perform the following steps:

1. Insert 2 (Item 4) self-tapping screws through the respective cover holes and into the holes in the handle (Item 2), leaving the first self-tapping screw loose to assure proper alignment. See Figure 3. Firmly fasten both screws into place. Do not over-tighten.

Figure 3. Bath Cover Assembly



Handle Part#3800609

Section 7

MAINTENANCE

Warning: Prior to any maintenance or service on this unit, disconnect the power cord from the power supply and the drain water from the tank. Before reattaching the unit to its power supply, be sure all volatile and flammable cleaners are evaporated and dry.

Avertissement: Avant d'effectuer toute maintenance ou entretien de cet appareil, débrancher le cordon secteur de la source d'alimentation. Avant de reconnecter l'appareil sur le secteur, s'assurer que tous les produits de nettoyage volatiles et inflammables sont complètement évaporés.

Cleaning

To clean the water bath, perform the following steps:

1. Clean the water bath with mild soap and water solution. DO NOT USE chlorine-based bleaches, as they will damage the tank interior. DO NOT USE spray cleaners that may contain solvents, which could leak through openings and cracks and harm electrical part coatings. Failure to do this may permanently damage the unit.
2. Rinse the water bath with clean water and wipe dry with a soft cloth. Stainless steel does not rust, but foreign materials in the tank may rust or leave rust spots. If corrosion is seen, scrub out the stains with a mild abrasive, never steel wool.

Heating and Water Level

The heating element of this bath does not contact the tank bottom, thus will not burn out if the tank is allowed to run dry. However, a tank going dry during operation can strain interior surfaces so this should not be allowed to occur. During operation a minimum of 5cm (two inches) of distilled water should be in the tank. Check water bath water level frequently, add water as needed. Please note that at higher operating temperatures, or in applications where a cover is not used, more frequent water level checking is required.

Test-tube Racks

If the water bath tank boils dry while containing plastic-ware, the plastic will melt. If you intend to use test-tube racks that are wire or plastic-coated wire that may wear and expose metal, damage may occur to the tank. It is recommended that all-plastic racks be used, and that the tank never be allowed to boil dry.

Section 8

TROUBLESHOOTING

Should the unit malfunction, use this section to determine the problem and resolution. Troubleshooting topics include:

- Temperature
- Miscellaneous

Warning: *Troubleshooting procedures involve working with high voltages that can cause injury or death. Troubleshooting should be performed only by trained personnel.*

Avertissement: *Les procédures de diagnostic des problèmes impliquent de travailler sur des composants sous tension et par conséquent un risque de blessure ou de mort par électrocution. Le diagnostic des problèmes doit être confié exclusivement à des personnes qualifiées.*

Temperature Troubleshooting

Problem	Possible Cause	Solution
Temperature too high	Insufficient quantity of water.	Fill bath a minimum of three-fourths (3/4) full with water.
	Main controller set too high	See Setting Main Temperature Control
	Main controller failed on	Call customer service.
Display reads "HI" or "400"+	Probe is unplugged	Call customer service.
	Probe is broken or wire to the sensor is broken.	Call customer service.
Temperature spikes over set point and then settles to set point.	Calibration issue	Recalibrate.
Temperature is too low	Over Temperature Limit is set too low.	See Setting Main Temperature Control.
	Bath temperature not recovered from water being added.	Wait for display to stop changing.
	Unit not recovered from power failure or being turned off.	Bath will need a minimum of 2 hours to warm up and stabilize.
	Main controller failure	Confirm with front panel lights that controller is calling for heat.
Display reads "LO" but heating all the time	Control failure	Call customer service.
Unit will not heat over a temperature that is below set point	OTL has activated.	Confirm that set point is set high enough and that the Over Temperature Safety is not activated.
	Temperature calibration is not correct.	Check calibration. Using independent thermometer, follow instructions in Calibration.

Problem	Possible Cause	Solution
Unit will not heat up at all	Controller Fault.	Do all controller functions work? Controller failure-call Customer Service.
	OTL has activated.	Set the Over Temperature Thermostat higher.
Indicated bath temperature unstable	Insufficient quantity of water.	Fill bath a minimum of three-fourths (3/4) full with water.
	Fluctuating by ± 0.1?	May be normal, especially without the use of bath cover.
	Ambient room temperature is radically changing	Temperature fluctuation due to door opening or room airflow from heaters or air conditioning. Stabilize ambient conditions.
	Bath not full	Assure that the bath is at least 1/3 full.
	Electrical noise	Remove nearby sources of RFI including motors, arcing relays or radio transmitters
	Bad connection on temperature sensor or faulty sensor	Call customer service.
Will not maintain set point	Insufficient quantity of water.	Fill bath a minimum of three-fourths (3/4) full with water.
	Temperature set too low.	Assure that set point is at least 5 degrees over ambient room temperature.
	Ambient temperature too high.	See if ambient is fluctuating.
Cannot adjust set points or calibration	Controller hangs up.	Turn entire unit off and on to reset. If repeatedly happens, call Customer Service.
Calibrated at one temperature, but not at another	Set point too far from calibration point.	This can be a normal condition when operating temperature varies widely. For maximum accuracy, calibration should be done as close to the set point temperature as possible.

Miscellaneous Troubleshooting

Problem	Possible Cause	Solution
Water Leaking	Leak / Corrosion	Shut the unit off and call Customer Service. **Service**
Tank Discoloration	Wrong type of water	Assure that clean, distilled water is used. Deionized water, tap water and chemicals should never be used in the tank. USE DISTILLED WATER ONLY.
	Sample Spills	Assure that no test samples have leaked into bath water.
	Metal Racks	No metallic products should be in the tank with the exception of the oscillation rack.
Unit will not turn on	No power.	Check wall power source.
	Fuse blown.	Check fuse/circuit breaker on unit or in wall.

Service

If this product should require service, contact your customer service representative.

Section 9

PARTS LIST

Table 3. Parts

Description	100-120V	220-240V
Element	9570743	9570744
Fuse, 6.3 AMP	3300515	3300515
Gable Covers	9750511	9750511
Microprocessor Main Temp Control	1750965	1750966
Over Temperature Safety Control	1750747	1750747
Pilot Lamp, Green	4650554	4650554
Pilot Lamp, Red	4650553	4650553
Power Cord	1800529	1800541
Power Switch	7850570	7850570
Rubber Feet w/Screws	2700513	2700513
Tank Gasket	3450538	3450538
Tanks	7930510	7930510

Section 10

UNIT SPECIFICATIONS

Table 4. Weight

Model	Shipping	Net
SWB30 SWB30-2 (WPC95 WPC95-2)	34.3 lb 15.56 kg	28.1 lb 12.75 kg

Table 5. Dimensions

Model	Exterior WxDxH	Interior WxDxH
SWB30 SWB30-2 (WPC95 WPC95-2)	16 x 19 x 16 in 40.64 x 48.26 x 40.64 cm	12 x 14 x 11 in 30.48 x 35.56 x 27.94 cm

Table 6. Capacity

Model	Liters
SWB30 SWB30-2 (WPC95 WPC95-2)	30

Table 7. Temperature

Model	Range	Uniformity	Sensitivity
SWB30 SWB30-2 (WPC95 WPC95-2)	Amb. +5°C to 80°C	+.2°C @ 37°C	+ .1°C

Table 8. Voltage Requirements

Model	Voltage	Amperage	Frequency
SWB30 (WPC95)	100-120V	7.0	50/60Hz
SWB30-2 (WPC95-2)	220-240	3.5A	50/60Hz

SCHEMATICS

Figure 4. Wire Diagram SWB30 (WPC95) (9851341)

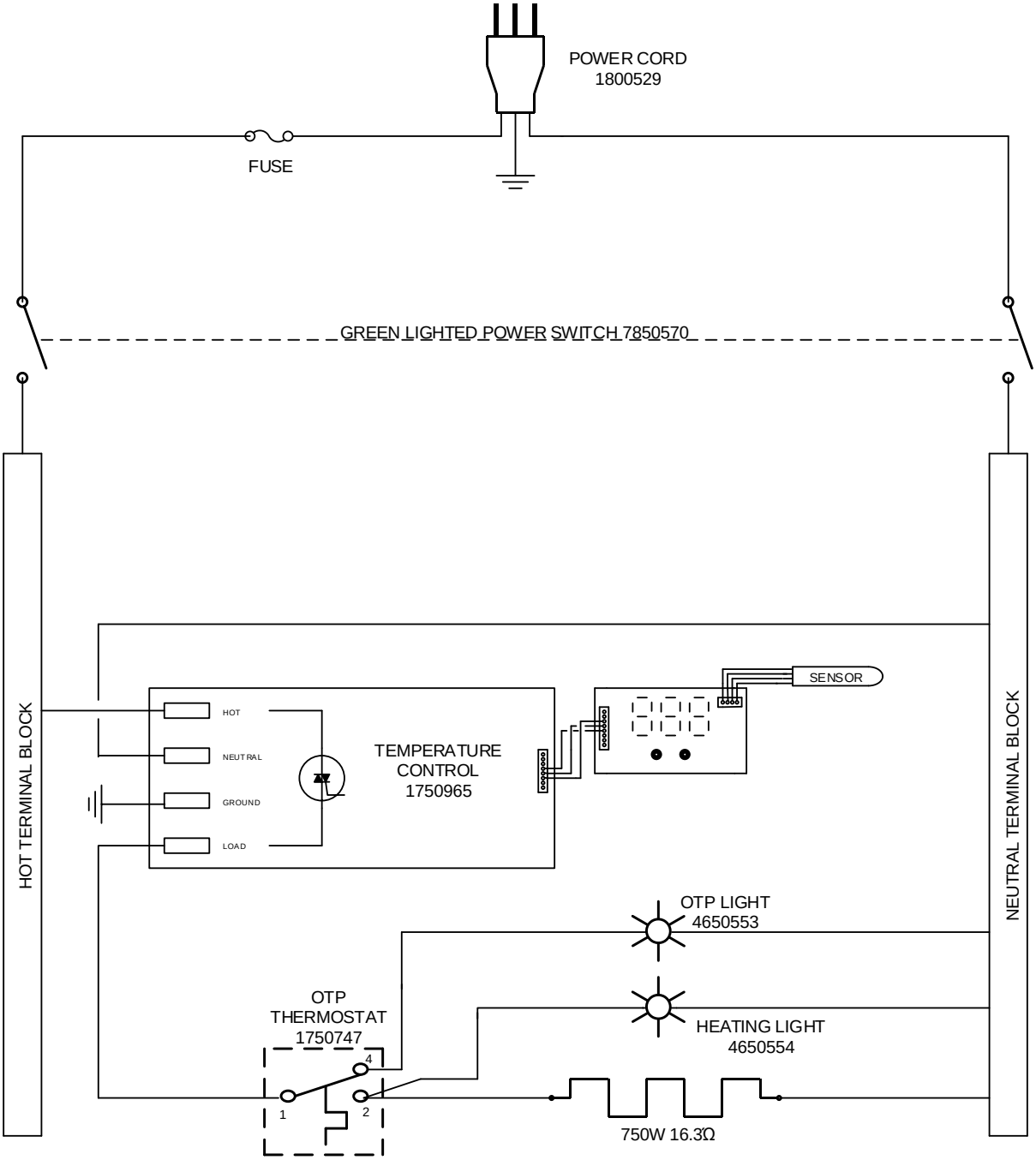


Figure 6. Wire Diagram SWB30-2 (WPC95-2) (9851342)